

WHAT IS CLAIMED IS:

1. A communication device for selecting a route of a packet, comprising:

5        a static routing table storing first routing information  
of a packet based on static routing;  
          a dynamic routing table storing second routing  
information of a packet obtained based on a dynamic routing  
protocol; and  
          a judging unit obtaining the first and second routing  
10      information of the packet from said static routing table and  
said dynamic routing table; if failure do not occur in a static  
route as a route corresponding to the first routing information  
obtained from said static routing table, selecting the static  
route as a route to which the packet should be forwarded; and  
15      selecting, if the failure occur in the static route, a dynamic  
route as a route corresponding to the second routing information  
obtained from said dynamic routing table, instead of the static  
route.

20        2. A communication device according to claim 1, further  
comprising:

          a forwarding unit forwarding the packet to the route  
corresponding to a result of the selection by said judging unit.

25        3. A communication device according to claim 1, wherein  
the packet contains a search key common to said static routing  
table and said dynamic routing table, and

said judging unit obtains the first and second routing information from said static routing table and said dynamic routing table by use of the search key.

5       4. A communication device according to claim 1, wherein the packet contains a first search key as a search key of said static routing table and a second search key as a search key of said dynamic routing table, and

10      said judging unit obtains the first and second routing information from said static routing table and said dynamic routing table by use of the first and second search keys.

15      5. A communication device according to claim 4, wherein the first search key is virtual circuit information contained in the packet, and

      the second search key is a unique destination address contained in the packet.

20      6. A communication device according to claim 5, wherein if the packet contains plural pieces of virtual circuit information, a predetermined piece of virtual circuit information is used as the first search key.

25      7. A communication device according to claim 1, further comprising:

      a writing unit writing, when transmitting a packet through the dynamic route to other communication device having

the same construction as that of said communication device, special information for said other communication device to select the dynamic route to the packet that should be transmitted.

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8. A communication device according to claim 1, wherein said judging unit selects the dynamic route if the special information is written to the packet.

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9. A communication device according to claim 4, wherein the first search key and second search key are two pieces of unique destination addresses different from each other.

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10. A communication device according to claim 3, wherein

the packet contains an IPv4 header, and

the search key is a destination address contained in the IPv4 header.

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11. A communication device according to claim 3, wherein

the packet contains an IPv6 header, and

the search key is a destination address contained in the IPv6 header.

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12. A communication device according to claim 5, wherein

the packet contains a MPLS shim header and the IPv4 header,

the virtual circuit information is a label value

contained in the MPLS shim header, and

the unique destination address is a destination address contained in the IPv4 header.

13. A communication device according to claim 5, wherein  
5 the packet contains the mpls shim header and the IPv6 header,  
the virtual circuit information is the label value contained in the mpls shim header, and  
the unique destination address is the destination address contained in the IPv6 header.

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14. A communication device according to claim 5, wherein  
the packet contains an ST2 header based on a streaming protocol and the IPv4 header,  
the virtual circuit information is a uniqueID contained  
15 in the ST2 header, and  
the unique destination address is the destination address contained in the IPv4 header.

15. A communication device according to claim 5, wherein  
20 the packet contains the ST2 header based on the streaming protocol and the IPv6 header,  
the virtual circuit information is the uniqueID contained in the ST2 header, and  
the unique destination address is the destination address  
25 contained in the IPv6 header.

16. A communication device according to claim 9, wherein

the packet contains a first IPv4 header and a second IPv4 header,

the first search key is a destination address contained  
in the first IPv4 header, and

the second search key is a destination address contained

5 in the second IPv4 header.

17. A communication device according to claim 9, wherein  
the packet contains a first IPv6 header and a second IPv6 header,

the first search key is a destination address contained

10 in the first IPv6 header, and

the second search key is a destination address contained  
in the second IPv6 header.

18. A communication device according to claim 9, wherein

15 the packet contains the IPv4 header and the IPv6 header,

the first search key is a destination address contained  
in the first IPv4 header, and

the second search key is a destination address contained  
in the second IPv6 header.

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19. A communication device according to claim 9, wherein  
the packet contains the IPv4 header and the IPv6 header,

the first search key is a destination address contained  
in the first IPv6 header, and

25 the second search key is a destination address contained  
in the second IPv4 header.

20. A communication device according to claim 5, wherein the packet contains the IPv6 header,

the virtual circuit information is a flow label contained in IPv6 header, and

5 the unique destination address is a destination address contained in the second IPv6 header.

21. A communication device for selecting a route of a packet, comprising:

10 a plurality of static routing tables storing first routing information of the packet based on static routing;

a dynamic routing table storing second routing information of the packet obtained based on a dynamic routing protocol; and

15 a judging unit obtaining the first and second routing information of the packet from said static routing tables and said dynamic routing table; if failure do not occur in all of static routes as routes corresponding to the first routing information, selecting any one of the static routes as a route

20 to which the packet should be forwarded; and selecting, if the failure occur in all the static routes, a dynamic route as a route corresponding to the second routing information obtained from said dynamic routing table, instead of the static routes.

25 22. A communication device according to claim 1, further comprising:

a marking process unit adding, if the dynamic route is

selected, a mark for indicating forwarding via the dynamic route into the packet that should be forwarded to the selected dynamic route.

5        23. A method for selecting a route of a packet by a communication device, comprising steps of:

      providing a static routing table storing first routing information of the packet based on static routing, and a dynamic routing table storing second routing information of the packet

10      obtained based on a dynamic routing protocol;

      obtaining the first and second routing information from said static routing table and from said dynamic routing table; and

      selecting, if failure do not occur in a static route as  
15      a route corresponding to the first routing information, a static route as a route to which the packet should be forwarded, and selecting, if the failure occur in the static route, a dynamic route as a route corresponding to the second routing information, instead of the static route.

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      24. A method according to claim 23, further comprising a step of:

      forwarding the packet to the route in accordance with a result of the selection by said judging unit.

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      25. A method according to claim 23, wherein the packet contains a search key common to said static routing table and

said dynamic routing table, and

the first and second routing information is obtained from said static routing table and said dynamic routing table by use of the search key.

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26. A method according to claim 23, wherein the packet contains a first search key as a search key of said static routing table and a second search key as a search key of said dynamic routing table, and

10 the first and second routing information is obtained by use of the first and second search keys respectively from said static routing table and said dynamic routing table.

15 27. A method according to claim 26, wherein the first search key is virtual circuit information contained in the packet, and

the second search key is a unique destination address contained in the packet.

20 28. A method according to claim 27, wherein if the packet contains plural pieces of virtual circuit information, a predetermined piece of virtual circuit information is used as the first search key.

25 29. A method according to claim 23, further comprising a step of:

writing, when transmitting a packet through the dynamic

route to other communication device, special information for said other communication device to select the dynamic route to this packet.

5        30. A method according to claim 23, wherein if the special information is written to the packet, the dynamic route is selected.

10       31. A method according to claim 28, wherein the first search key and second search key are two pieces of unique destination addresses different from each other.

15       32. A communication device for selecting a route of a packet, comprising:

      a first routing unit selecting a route for guaranteeing a communication quality of the packet; and

      a second routing unit selecting a route for securing reachability of the packet,

20       the route of the packet is selected by use of one of said first routing unit and said second routing unit in accordance with a predetermined condition.